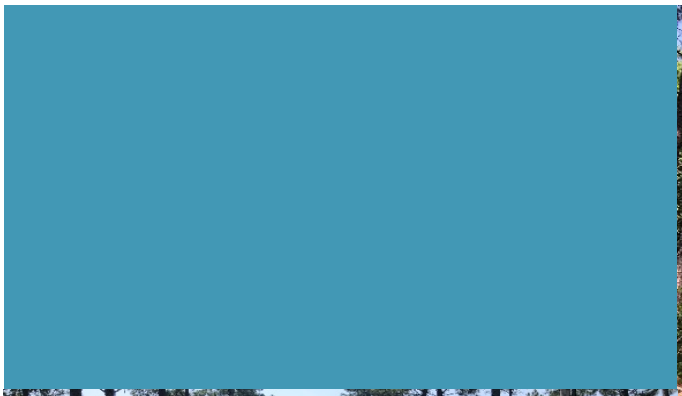
Exhibit 3 to Testimony of Blair Wade

Critical Issues Analysis



Critical Issues Analysis

Lambert Solar Project

prepared for Silicon Ranch Corporation

Georgetown County, South Carolina

August 2019

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Introduction

Document Description

HDR Engineering, Inc. (HDR) prepared this Critical Issues Analysis (CIA) for Silicon Ranch Corporation's proposed solar facility in Georgetown County, South Carolina. The CIA identifies potential development constraints within an approximate 2,082-acre Study Area based on publicly available data. In addition, this report summarizes federal, state and local permitting requirements that may be applicable to the project. Based on the results of a desktop review and on-site visit, HDR has outlined recommendations for critical resource areas that will require further study prior to proceeding with project development.

HDR's critical issues analysis primarily included a desktop evaluation of the environmental characteristics of the Study Area. HDR's desktop evaluation identified existing land use, infrastructure, soils, geologic resources, recreational and scenic resources, hydrologic resources, biological resources, and cultural resources within the Study Area and immediate vicinity. HDR collected and used publicly available information through database research and Geographic Information System (GIS) mapping. The analysis reviewed the following information:

- U.S. Environmental Protection Agency (USEPA) – Hazardous Waste "Enviromapper" Database
- U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Soil Survey Geographic (SSURGO) data and State Soil Geographic (STATSGO) data
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps
- USFWS county level species information
- U.S. Geological Survey (USGS) National Land Cover Dataset 2006
- USGS topographic maps and digital elevation data
- Federal Emergency Management Agency (FEMA) Floodplain data
- National Hydrography Dataset (NHD)
- Environmental Systems Research Institute (ESRI) ArcGIS online aerial imagery, streets, and basemap information
- South Carolina ArchSite
- U.S. Army Corps of Engineers (USACE) Regulatory In-Lieu Fee & Bank Information Tracking System (RIBITS)

In addition to the desktop evaluation, Blair Wade and Jason McMaster, PWS, visited the site on June 3, 2019 to conduct a site reconnaissance. HDR used the data to prepare this analysis summarizing environmental constraints at the Study Area, to prepare the environmental maps, and to identify permits that may be necessary for construction of the project. Appendix A contains a preliminary permit and approvals matrix. Appendix B contains Site Maps Report (Figures 1 to 10). Appendix C contains a USFWS iPAC report. Appendix D contains an EDR Radius Map report.

Project Description

The Study Area boundary encompasses approximately 2,082 acres of Georgetown County, South Carolina. The Study Area's location is shown on Figure 1 in Appendix B. Silicon Ranch Corporation is proposing a solar facility for the Study Area. The final project footprint would be sited within the Study Area based on areas that will have that least amount of impact to existing resources.

The Study Area is located on private land bound to the north by Alt. US 17 (Saints Delight Road), to the east by Wild Horse Road, to the south by County Road S-22-387, and to the west by Windum Drive. The Study Area is approximately 6.7 miles south of Andrews, South Carolina. An aerial photograph of the Study Area is shown on Figure 1 in Appendix B.

Environmental Characteristics

Public Services and Infrastructure

Roadway Network

Major roads in the area include Alt. US 17 (Saints Delight Road) to the north, Wild Horse Road to the east, County Road S-22-387 to the south, and Windum Drive to the west. Access to the region is available via SC 41, which is located approximately 4.75 miles northwest of the Study Area, Alt. US 17 along the northern boundary of the Study Area, and US 17, which is located approximately 11 miles east of the Study Area. A series of unnamed unpaved roads are located within the Study Area, largely providing access to different timber stands. An unnamed, unpaved road leads south from Alt. US 17 to a residence within an outparcel in the center of the Study Area.

Existing Infrastructure

An electrical transmission line corridor passes through the northwest portion of the study area, continuing to the east and west of the Study Area. No gas or other underground utilities were noted during the field visit. Minor electrical distribution lines serving individual properties and residences likely exist within the project site.

Cultural Resources

In June 2019, HDR conducted a desktop analysis of known and potential cultural resources within and in proximity to the Study Area. Staff consulted the South Carolina ArchSite to determine if previously identified archaeological sites, historic architectural resources, and previous cultural resource investigations are located within a ½-mile radius of the Study Area, referred to as the project research radius. This section provides regulatory background on the evaluation of effects to cultural resources in federal undertakings, describes known cultural resources and the potential for unidentified cultural resources within the project research radius, and summarizes potential issues that may arise during the proposed project.

Regulatory Background

Cultural resources are properties and places that illustrate aspects of prehistory or history or have long-standing cultural associations with established communities and/or social groups. Cultural resources may include archaeological sites, unmodified landscapes and discrete natural features, modified landscapes, human-made objects, and buildings and groups of buildings.

Section 106 of the National Historic Preservation Act (NHPA), as amended (16 USC. § 470) is specifically designed to address the effects of federal and/or federally funded projects on tangible, or physically concrete, cultural resources of historic value. Once identified, cultural resources are evaluated for their eligibility for inclusion on the National Register of Historic Places (NRHP) maintained by the National Park Service (NPS). Tangible cultural resources may qualify for inclusion on the NRHP if they are 50 years of age or older (unless in exceptional cases) and if found to embody one of four different types of values, or criteria, according to 36 CFR § 60:

- *Criterion A:* association with events that have made a significant contribution to the broad patterns of our history.
- *Criterion B:* association with the lives of persons significant in our past.
- *Criterion C*: embodiment of the distinctive characteristics of a type, period, or method of construction; representative of the work of a master; possessing high artistic values; or representative of a significant and distinguishable entity whose components may lack individual distinction.
- *Criterion D*: cultural resources that have yielded, or may be likely to yield, information important in prehistory or history.

Cultural resources that are listed or considered eligible for listing on the NRHP are called “historic properties.” Federal agencies are required by the NHPA and the National Environmental Policy Act (NEPA) to consider the possible adverse effects or impacts of their undertakings on historic properties and take measures to avoid, minimize, or mitigate these effects.

Considering an undertaking’s possible effects on historic properties is accomplished through a four-step review process outlined in Section 106 of the NHPA (36 CFR § 800). These steps, often referred to as the Section 106 process, are: (1) Initiation (defining the undertaking and the Area of Potential Effects [APE] and identifying the parties to be consulted in the process); (2) Identification (studies to determine whether cultural resources are present in the APE and whether they qualify as historic properties); (3) Assessment of adverse effects (determining whether the undertaking would affect the qualities that make the property eligible for the NRHP); and (4) Resolution of any adverse effects (by avoidance, minimization, or mitigation). Throughout this process, the lead federal agency must consult with the appropriate State Historic Preservation Officer, federally recognized American Indian tribes that have an

interest in the undertaking, and any other party with a vested interest in the undertaking. Through a variety of regulations and guidelines, federal agencies are encouraged to coordinate Section 106 and NEPA review to improve efficiency and allow for more informed decisions.

This study represents the initial process conducted during the identification stage of the Section 106 process.

Cultural Resources Identification

The following presents the results of background research to identify known or potential cultural resources within the project research radius. The results derive only from background research and not from field survey identification of cultural resources, which may occur if efforts towards the Proposed Action proceed and in accordance with South Carolina State Historic Preservation Office (SCSHPO) recommendations.

METHODS

Background research involved online consultation of the ArchSite database, which includes information on previously conducted cultural resources studies and previously recorded cultural resources. HDR staff also viewed historic USGS topographical maps and aerial photographs, available online. Research was conducted in June 2019.

RESULTS

Two previous cultural resource surveys have occurred within the Study Area: Winyah-Jefferies 230 kv Transmission Line Rebuild project (Anderson 1978) and the Lambert Town kv Project (located at the existing substation). ArchSite research indicated that there are two previously recorded resources located within the project research radius (Figure 10 of Appendix B).

- Architectural resource 0721 was recorded during New South's 2006 Historic Resources Survey of Georgetown County (Joseph et al. 2006). Architectural resource 0721, known as "The Hanging Tree" is located to the north of Alt. US 17 from the project tract. This resource is not eligible for the NRHP.
- Archaeological site 38GE165 is located in a transmission line corridor to the north of the project tract. It was recorded by Commonwealth Associates in 1978 during the survey for the Winyah-Jefferies 230 kv Transmission Line Rebuild project (Anderson 1978). This cultural resources survey crossed the northwest portion of the Study Area. Site 38GE165 contains a fairly dense scatter of possible Early Archaic to Late Woodland (approx. 2500 BC- 1100 AD) ceramic and lithic artifacts. No NRHP assessment was made, though the report authors noted that the research potential was high, suggesting that this site may be potentially eligible for the NRHP.

Background research determined that no NRHP-eligible or -listed resources are located within the Study Area. There are no properties listed on the NRHP within the project research radius. Maps and aerial photographs of the area demonstrate that the project research radius was largely a rural agricultural and timber/forest area throughout the twentieth century and remains rural at the present time. According to the 1942 *Cedar Creek, SC* USGS topographic map, there

were no structures within the Study Area, though as also seen on the 2013 USGS topographic map, there are a number of structures located around the perimeter of the Study Area, as well as two structures located within an outparcel in the center of the Study Area. On both of the referenced USGS topographic maps, Trinity Church is noted just south of the Study Area. On a modern aerial photograph, this entire area is wooded and it appears the church no longer exists. Care should be taken in this portion of the Study Area, should there be a possible cemetery associated with this former church location. Cemeteries are protected from desecration by South Carolina state law. In addition, some of the houses that appear on 1942 *Cedar Creek, SC* USGS topographic map may still be extant in the project research radius.

Summary and Conclusions

Background research was conducted to identify known or potential cultural resources within a ½ mile research radius surrounding the Study Area. No cultural resources listed or eligible for listing on the NRHP were identified within the Study Area. Maps and aerial photographs show that the project research radius has been and remains a rural agricultural and timber/forest area.

Field surveys of the Study Area and portions of the surrounding 0.5-mile research radius may identify archaeological and architectural resources associated with residential uses of the Study Area, and additional architectural resources may be documented surrounding the Study Area. The most recent comprehensive architectural survey in this area was in 2006, so an additional/updated architectural survey of the study area may be necessary. Clusters of houses/businesses are located mostly along the southern and western boundaries of the project tract. No additional studies are recommended at this time. However, archaeological and or architectural studies may be requested by regulatory agencies as part of the permitting process for the project. Pending coordination with the SCSHPO, intensive archaeological survey would likely be necessary for portions of the Study Area proposed to be developed. Architectural survey would likely be required for the SCSHPO-specified radius surrounded the proposed development portion of the Study Area. The length of time required for the archaeological and architectural surveys is dependent on the acreage to be developed.

Public Lands, Recreational and Scenic Resources

No county, state, or federal public lands or recreational resources are located within the Study Area. The closest publically-owned land is Sampit Park located approximately 2 miles southeast of the Study Area within Sampit, South Carolina. Wee Tee Wildlife Management Area, and Francis Marion National Forest are located approximately 6.5 miles south of the Study Area and can be seen in Figure 1 in Appendix B. No National or State Scenic Byways are located in the vicinity of the Study Area.

Traffic

Existing traffic volumes were determined using Average Annual Daily Traffic (AADT) counts measured at existing South Carolina Department of Transportation (SCDOT) stations. The 2018 AADT for US 17 ALT (Saints Delight Rd) was 2,600 vehicles measured at station 116 on the northeastern boundary of the site; 225 vehicles at station 309 on Walker (S-387) approximately

0.3 miles southeast of the Study Area; 200 vehicles at station 313 on Columbus Road approximately 1.5 miles southeast of the Study Area (SCDOT 2018).

During construction there would be an increase in local traffic due to construction workers commuting to and from the site. Additional traffic due to deliveries, heavy equipment for excavation and waste removal would also be expected. Most construction workers would likely drive their own vehicles or carpool. Parking would likely be on site. Some workers would likely leave the site during lunch break. Traffic flow around the work site would, therefore, be heaviest at the beginning of the work day, at lunch, and at the end of the work day.

During operation of the solar site, it is likely that a number of full-time employees and contractors would travel to and from the site. A traffic study may be required by regulatory agencies as part of the permitting process for the project.

Land Use/Setbacks

Agriculture and forestry are the major land uses in the immediate vicinity of the Study Area. Land use within the Study Area consists of forested land and active silviculture areas. Aerial photography indicates several residences adjacent to the Study Area. There are no local Georgetown County ordinances, or state buffer rules.

Noise

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by the USEPA and has been adopted by most federal agencies (USEPA 1974). A DNL of 65 A-weighted decibels (dBA) is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction. The A-weighted sound level, used extensively in this country for the measurement of community and transportation noise, represents the approximate frequency response characteristic of the average young human ear. Areas exposed to a DNL above 65 dBA are generally not considered suitable for residential use. A DNL of 55 dBA was identified by USEPA as a level below which there is no adverse impact (USEPA 1974).

A ½-mile radius around the Study Area was examined to characterize existing land uses including identification of potential noise sensitive receptors close to the Study Area. Noise sensitive receptors can best be defined as those locations or areas where dwelling units or other fixed, developed sites of frequent human use occur. The Study Area is located within a predominantly rural area of Georgetown County. As described above, land uses include residential, agricultural, and forestry. Ambient noise at the Study Area consists mainly of agricultural, moderate traffic, rural, and natural sounds (farming equipment, moderate traffic, moderate voice, wind, wildlife, and similar sounds). Generally, noise levels in these types of areas range from 45 to 55 dBA (USDOT 2016). No noise study was conducted as part of this CIA.

A number of residential properties were noted within a ½-mile radius of the Study Area. These properties are located in all directions around of the Study Area. Approximately 64 single family residential properties are located within ½ mile of the Study Area. Trinity Lutheran Church, and Saints Delight Pentecostal, is located within ½ mile of the Study Area.

It is likely that construction of the proposed project would cause minor, temporary adverse impacts to the ambient sound environment around the Study Area. Homeowners adjacent to the property boundary could experience elevated noise levels during daytime hours during construction of the solar facility. Operation of the solar facility would not result in noise impacts, and occasional maintenance would have minor, temporary noise impacts.

Land Cover

Figure 2 (Appendix B) shows the National Land Cover Dataset land cover data for the Study Area. Based on these data and field observation, the majority of land cover of the Study Area is evergreen forest, with scattered areas of herbaceous, developed (low intensity, open space), shrub/scrub, deciduous forest, and woody wetlands. A transmission line is located through the northern portion of the Study Area.

Hazardous Materials

A search of the USEPA's Enviromapper mapping tool indicated no hazardous waste facilities within 2.5 miles of the Study Area (USEPA 2018b). The Enviromapper database tracks air, water, waste, land, toxics and radiation sites.

Environmental Data Resources (EDR) was contracted by HDR to complete a database search of federal, state, local, and tribal environmental records for the Study Area. A computerized environmental information database search was performed for the Study Area by EDR on July 31, 2019. The databases searched included federal, state, local, tribal, and EDR proprietary databases for listings within the Study Area and standard ASTM E 1527-13 search distances. The EDR Report did not identify any listings within the Study Area. One mapped listing was identified in the EDR Report within the search radius (ASTM defined search distances plus an additional ½ mile).

Findings

General findings of this assessment include the following:

- The Study Area consists of an approximately 2,082-acre area for the proposed solar site, located in Georgetown County, South Carolina.
- The database search identified a Leaking Underground Storage (LUST) tank that was located within 0.25 miles of the Study Area. The tank had been used for petrol and was cleaned up by October 23, 2007.

Opinions

HDR has reviewed only those of the stated data sources within the EDR Report. Based on the limited review of that data, HDR has developed the following preliminary professional opinion:

- Indications of contamination have not been identified in association with the site.

Conclusions

Based on the above-detailed Findings and Opinions and the scope of services previously defined, HDR preliminarily concludes that potentially hazardous environmental conditions have not been identified in association with the Study Area, as enumerated in the Findings section above.

Recommendations

Based on the preliminarily conclusion that potentially identified environmental conditions have not been found on the Study Area, HDR recommends that Silicon Ranch Corporation perform a full Phase I Environmental Site Assessment to determine potential risk, as this CIAis only for screening and preliminary evaluation purposes in partial support of due diligence and preliminary or proposed property acquisition for the property. A full American Society for Testing and Materials (ASTM) Phase I ESA is the industry standard under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and that resulting report may qualify the user for relief from liabilities as one of three “defenses” including the “innocent landowner,” the “contiguous property owner,” and/or “bona fide prospective purchaser.”

Air Quality

Air quality in Georgetown County is in attainment with National Ambient Air Quality Standard (NAAQS).

Geography and Soils

Elevation and Topography

The Study Area consists of several streams surrounded by flat land. The lowest portion of the Study Area is in the southeast at approximately 19 feet above mean sea level (amsl). The highest ground within the Study Area is near the northern portion at approximately 20 feet amsl, which can be seen in Figure 3 of Appendix B.

Soils

HDR queried the USDA-NRCS Soil Survey Geographic database (SSURGO) soils for the Study Area; Table 1 and Figure 4 (Appendix B) summarize the soil units found within the Study Area.

Table 1. Soil Types within Study Area

Map Unit Symbol	Map Unit Name	Soil Classification	Hydric Soil Y or N	Acres in Project Area	Percent of Project Area
12A	Yauhannah loamy fine sand, 0 – 2% slopes	Prime farmland	Y	122.6	5.9
13	Bladen loam, 0 – 2% slopes	Statewide importance	Y	598.3	28.7
18	Cape Fear loam	Statewide importance	Y	54.0	2.6
26A	Eulonia loamy fine sand, 0 – 2% slopes	Prime farmland	N	25.0	1.2
26B	Eulonia loamy fine sand, 2 – 6% slopes	Prime farmland	N	2.1	0.1
59	Wahee fine sandy loam	Statewide importance	Y	1,280.3	61.5
Totals for Project Area				**2,082.3**	**100.0**

Source: USDA NRCS (2019)

A hydric soil is a soil that is, "formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Federal Register July 13, 1994). Yauhannah loamy fine sand, Bladen loam, Cape Fear loam, and Wahee fine sandy loam all have a hydric component and account for 98.7 percent of on-site soils. The remainder of the soils within the Study Area are well drained and do not have a hydric component. Hydric soils are shown on Figure 5 (Appendix B).

Farmlands

The USDA-NRCS has classified farmland soils into three categories based on suitability for agricultural uses. These include soils of prime, unique, and statewide importance. Criteria used for prime and unique farmlands were published January 31, 1978 in the Federal Register and amended in June 17, 1994. Soils of prime, unique, and statewide importance occurring within the Study Area are summarized in Table 1 and shown in Figure 6 (Appendix B). The USDA has defined prime farmlands (PFL) as soils that are best suited to producing crops, feed, forage, fiber, oil seed crops, and also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). These soils produce the highest yields with minimal inputs of energy and economic resources. Unique farmlands include soils that have a special set of properties that are unique for producing certain high value crops. Farmland of statewide importance are lands that do not meet the requirements for prime farmland but that are of statewide importance for the production of food, feed, fiber, forage, and oil seed crops. One-hundred percent of soils within the Study Area are classified as PFL or soils of statewide importance. The majority of the Project Area consists of planted pine stands in all different stages of harvest.

Consultation with NRCS on prime farmland impacts may be required if the NEPA process is triggered. If required, consultation would include completing Form AD-1006, the Farmland Conversion Impact Rating form. Form AD-1006 assesses non-soil related criteria such as the potential for impact on the local agricultural economy if the land is converted to non-farm use and compatibility with existing agricultural uses.

Hydrology and Water Resources

Groundwater Resources
The Study Area is located in the outer coastal plain physiographic province. This portion of South Carolina consists of two different landscapes, including cropland and pine-dominated forest, also called “flatwoods.” Major floodplains are present in this ecoregion, and are largely forested.

Watersupply Watersheds
The proposed project is located in the Pee Dee Watershed. The unnamed streams within the study area are provisionally classified as Freshwater (FW) by SCDHEC.

Streams and Wetlands
The U.S. Army Corps of Engineers (USACE), through Section 404 of the Clean Water Act, has regulatory authority over wetlands and waters of the U.S. (jurisdictional waters) that support an Ordinary High Water Mark and discharge into Traditional Navigable Waters. This authority empowers the USACE to identify wetland/upland boundaries and to regulate alterations of jurisdictional waters. These boundaries are established in accordance with the methodology in the 1987 USACE Wetlands Delineation Manual with technical guidance from the Atlantic and Gulf Coastal Plain Region Regional Supplement and the recent Rapanos guidance.

The USACE (Federal Register 1982) and USEPA (Federal Register 1980) jointly define wetlands as: “Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (USACE 1987). Wetlands generally include swamp marshes, bogs, and similar areas. The ecological parameters for designating wetlands include hydrophytic vegetation, hydric soils, and hydrologic conditions that involve a temporary or permanent source of water to cause soil saturation.

The USFWS’s NWI data, USGS topographic maps, USGS NHD data, USDA-NRCS Soil Survey data, and aerial photographs were used to evaluate potential jurisdictional wetlands within the Study Area. During a field reconnaissance on June 3, 2019, HDR personnel used the desktop analysis data to spot-check their accuracy based on soils, hydrology, and vegetation data observed in the field. HDR personnel found that NWI data under-represented the extent of wetlands within the site. An extensive ditch network is present on the site, which was likely created to drain wetlands and support timber management. Figure 7 in Appendix B provides a representation of the types and extents of jurisdictional wetlands that may be present based on a combination of NWI data, USGS topographic maps, soil data, and field reconnaissance. The NHD identified over 3.7 miles of streams located within the Study Area. These stream and wetland features can be seen in Figure 8 in Appendix B.

HDR recommends that a jurisdictional delineation of on-site streams and wetlands be conducted to determine the extent of wetlands and waters present in the Study Area. Wetlands within the site are considered “atypical” in accordance with the USACE Atlantic and Gulf Coastal Plain Region Regional Supplement because of land used for silviculture. The silvicultural practice and ditch network has resulted in impacts to the hydrological regime, vegetation, and the in-situ soils, which are the three wetland delineation indicators. However, nearly the entire site is accessible due to the maintenance of the existing roads. HDR would follow the best practices for delineating atypical wetlands outlined in the USACE Atlantic and Gulf Coastal Plain Region Regional Supplement; however, the scale of the site and challenges of an atypical delineation may affect the schedule and budget for the proposed Project.

Floodplains

According to GIS FEMA-designated Special Flood Hazard Area (SFHA) zone data, the entire project area exists in a Flood Zone “X” of (Figure 9 of Appendix B). A flood zone X is considered a “Non-Special Flood Hazard Area”, where “the risk of flooding is reduced, but not completely removed”.

Compensatory Stream and Wetland Mitigation

Development of this site may result in unavoidable impacts to jurisdictional streams and/or wetlands. Compensatory mitigation would likely be required for all impacts to jurisdictional waters. Compensatory mitigation is the restoration, establishment, enhancement, or preservation of aquatic resources for the purpose of offsetting losses of aquatic resources resulting from activities authorized by USACE permits. HDR has reviewed the availability of mitigation credits for the project watershed using the USACE Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS). The study area is located in the Pee Dee River Basin, Carolina Coastal-Sampit watershed (Hydrologic Unit Code 03040207). The study area is within the Secondary Service Area for the Waccamaw Mitigation Bank and Carter Stilley Wetland and Stream Mitigation Bank, which have freshwater wetland and stream credits available according to RIBITS.

Wildlife and Plants

Vegetative Communities

The Study Area is an undeveloped area consisting primarily of forest land (planted pines). HDR conducted a limited field review of the project site on June 3, 2019. Based on this site review, the project area appears to be dominated by pine plantation and early successional mixed hardwood forests. The planted pine wetland areas were comprised of slash pine (*Pinus taeda*), loblolly pine (*Pinus elliotti*), sweet bay (*Magnolia virginiana*), fetterbush (*Lyonia spp*.), wax myrtle (*Morella cerifera*), lowbush blueberry (*Vaccinium angustifolium*), wild blackberry (*Rubus spp*.), netted chain fern (*Woodwardia areolata*), and cinnamon fern (*Osmundastrum cinnamomeum*).The mixed hardwood wetlands were comprised of bald cypress (*Taxodium distichum*), red maple (*Acer rubrum*), swamp tupelo (*Nyssa biflora*), sweet bay, American holly (*Ilex opaca*), and switch cane (*Arundinaria tecta*).

Birds

Common birds in the vicinity of the Study Area may include songbirds and game birds such as turkey. Migratory birds are those that may use the Study Area for resting, foraging, or breeding for only a portion of the year.

MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act (MBTA) of 1918 prohibits the "take" of migratory birds. The regulatory definition of "take" as defined by 50 CFR § 10.12, "means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue hunt, shoot, wound, kill, trap, capture, or collect." The following prohibitions apply to migratory bird nests: "possession, sale, purchase, barter, transport, import and export, take, and collect." The MBTA is executed and enforced by the USFWS. Through the USFWS Information Planning and Conservation System (IPaC) Trust Resource Report, the following list of migratory species potentially inhabiting the Study Area was obtained.

Table 2. Migratory Birds

Common Name	Breeding Season	Scientific Name
Bald Eagle*	Sep 1 – Jul 31	*Haliaeetus leucocephalus*
Prothonotary Warbler	Apr 1 – Jul 31	*Protonotaria citrea*

* Species also protected under the Bald and Golden Eagle Protection Act.

Federally-Listed Species

"Listed" species are recognized by federal, state, or other agencies in an effort to protect them and their habitat under the federal Endangered Species Act (1973). These species are vulnerable to habitat loss and population decline because of their rarity. The analysis also considers species protected under the Bald and Golden Eagle Protection Act (BGEPA) [16 USC § 668–668(c)], which prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts, nests, or eggs.

The USFWS provides federally threatened and endangered species data at the county level for public use. Table 4 provides the USFWS list of endangered and threatened species that were listed on the IPaC report for the Study Area. Assuming that Section 404/401 permitting is required for this project HDR recommends coordination with the USFWS South Carolina Field Office to determine if any documented occurrences of federally-listed species occur in or near the Study Area. There are no coordination requirements for state-listed species however it is possible that they may need to be addressed.

Table 3. Federal Listed/Candidate Species – USFWS IPaC Site Specific Report

Mammals		
West Indian Manatee *(Trichechus manatus)*	Threatened	Not possible. Habitat not available.
Birds		
Eastern Black Rail *(Laterallus jamaicensis ssp. jamaicensis)*	Proposed Threatened	Possible. Preferred habitat is high salt marsh, but birds have been found in inland wetlands.
Kirtland's Warbler (*Setophaga kirtlandii*)	Endangered	Possible. Unable to determine without further surveying.
Piping Plover (*Charadrius melodus*)	Threatened	Not possible. Habitat not available.
Red Knot (*Calidris canutus rufa*)	Threatened	Not possible. Habitat not available.
Red-cockaded Woodpecker *(Picoides borealis)*	Endangered	Possible. RCW requires mature pine stands. Unable to determine without further surveying.
Wood Stork (*Mycteria americana*)	Threatened	Possible. Unable to determine without further surveying.
Reptiles		
Green Sea Turtle (*Chelonia mydas*)	Threatened	Not possible. Habitat not available.
Kemp's Ridley Sea Turtle *(Lepidochelys kempii)*	Endangered	Not possible. Habitat not available.
Leatherback Sea Turtle *(Dermochelys coriacea)*	Endangered	Not possible. Habitat not available.
Loggerhead Sea Turtle *(Caretta caretta)*	Threatened	Not possible. Habitat not available.
Flowering Plants		
American Chaffseed (*Schwalbea americana*)	Endangered	Possible but unlikely. Plant is dependent on factors such as mowing and fire.
Canby's Dropwort *(Oxypolis canbyi)*	Endangered	Possible. A plant survey would be required.
Pondberry (*Lindera melissifolia*)	Endangered	Possible. Forested wetlands do exist in the project area. A full plant survey would be required.
Seabeach Amaranth *(Amaranthus pumilus)*	Threatened	Not possible. Habitat not available.

The following section provides additional information about species that may have suitable habitat within the Study Area.

EASTERN BLACK RAIL (LATERALLUS JAMAICENSIS JAMAICENSIS)

The black rail is the smallest North American rail with both males and females averaging 6 inches in length and weighing 1.1 oz. The male black rails are blackish gray on the head breast and upper abdomen with a brown nape patch and small white spots on the lower back, wings, rump, and tail. Females are noticeably lighter gray and have whitish throats (NatureServe, 2019). Both adult males and females are short billed and have scarlet red eyes – changing from their birth color of amber (USFWS, 2014)

Black rail nests are constructed in dense vegetation just a few inches above the ground surface (Harrison, 1979). The nest itself is constructed of woven dead and live vegetation and is covered by a dome arch of grass. The eggs are oval in shape and are white in color sprinkled with fine brown dots (Harrison, 1975). The black rail diet is diverse, consisting of aquatic plant seeds, insects, and isopods (Terres, 1980)

Black rail population estimates range from 5,000 – 50,000 individual birds, but are on the decline (NatureServe, 2019). Declining numbers are directly correlated with loss of ideal habitat – high marsh coastal wetlands. In South Carolina, the black rail makes its home primarily in the outer coastal plain, with scattered inland populations (USFWS, 2014).

KIRTLANDS WARBLER (*SEPTOPHAGA KIRTLANDII*) - ENDANGERED

Kirtland's warbler was listed as an endangered species in 1967. A recovery plan exists for this species and was issued in 1985. The Kirtland's warbler is a coastal migrating songbird reaching 6 inches in length and 0.45 ounces in weight. They have blue-gray plumage with black streaks and a yellow underbelly. Eggs are usually laid between late May and June and chicks are fledged between 8 and 12 days after hatching. Nest mortality is generally a result of predation by American crows, blue jays, hognose and garter snakes, and squirrels (NatureServe, 2014a).The Kirtland's warbler's preferred breeding habitat is fire generated dense stands of jack pine with little or no hardwoods present. They also nest on the ground at the base of pine trees in their breeding ranges of upper Michigan, Wisconsin, and Ontario, Canada. Their diet primarily consists of berries, tree sap, and insects. Winter migration sightings occur along their route from their breeding habitats to their destination in the Bahamas, including areas of the southeastern coast of the U.S (NatureServe, 2014). The USFWS has not designated critical habitat for this species. At this time, we are unable to determine if the proposed project area contains suitable habitat for the Kirtlands warbler.

RED-COCKADED WOODPECKER (*PICOIDES BOREALIS*)

The red-cockaded woodpecker (RCW) is characterized by black and white horizontal stripes on the back, white cheeks and underparts, and a black cap and stripe on the side of the neck and throat. In addition, the males have a small red spot on each side of the black cap. The RCW is 7-8 inches long with a 13-14 inch wingspan, and are dependent upon open old growth pine stands. Nesting habitat generally requires trees 80-120 years old, while stands older than 30 years provide suitable foraging habitat. Historically, long leaf pine stands are most commonly used, but others may be acceptable. Understory requirements are most often maintained with

prescribed burning (USFWS, 1993). At this time, we are unable to determine if the proposed project area does contains RCW required habitat.

WOOD STORK (*MYCTERIA AMERICANA*) - THREATENED

The wood stork is characterized by its gray/black featherless head, white body, black tail, and the black trailing edges of the wings. The wood stork stands between 33-45 inches tall, can have a wingspan greater than 60 inches, and is one of the largest wading birds in South Carolina. Wood storks nest in colonies, and generally prefer tree tops (mainly cypress and blackgum) over or adjacent to water in the forested swamps of the coastal plain. Foraging habitat consists of open, shallow water where they feed primarily on small fish. This includes various freshwater marshes, swamps, lagoons, ponds, flooded pastures, ditches and tidal creeks. The degradation and loss of feeding habitat is a major cause of their decline. Due to this, nesting wood storks may travel long distances (i.e. 30-40 miles) from the colony to suitable feeding habitat, while non-breeding individuals may travel even further (SCDNR, Wo2015). The project area includes limited to no freshwater marshes, swamps, lagoons, ponds, flooded pastures, ditches and tidal creeks that could provide feeding habit for the wood stork. At this time, we are unable to determine if the proposed project area contains suitable wood stork habitat.

AMERICAN CHAFFSEED (*SCHWALBEA AMERICANA*) - ENDANGERED

American Chaffseed is an erect perennial herb with unbranched stems with large, purplish-yellow, tubular flowers, with the entire plant densely but minutely hairy. The leaves are alternate, lance shaped to elliptic, and stalkless. The flowering period occurs from April to June in the southern region. The fruits are long, narrow capsules enclosed in a sac-like structure that mature from early summer in the south. The American chaffseed occurs in sandy, acidic, seasonally moist to dry soils in pine or longleaf pine flatwoods, pine savannas, pine/scrub oak sandhill, sandhill seeps, or other open grass/sedge-dominated communities. Historically, the chaffseed existed on savannas and pinelands through the coastal plain that was maintained by naturally occurring fires. The surviving populations still occur in areas that are subject to frequent fire, but can also thrive with strategic mowing (USFWS, 1995). It is unlikely that American chaffseed exists within the project area as its dependent on factors such as mowing and fire. However, HDR recommends that a pedestrian survey for this species be conducted during the appropriate survey window (between April and May) to confirm the presence or absence of the species on the site.

PONDBERRY (*LINDERA MELISSIFOLIA*) - ENDANGERED

Pondberry is a deciduous shrub that grows to 6-feet in height and is characterized by its drooping, ovately to elliptically shaped leaves with a tapered tip that have a strong, sassafras fragrance when crushed. The undersides of the leaves are strongly net-veined and covered with short soft hairs. Pale yellow flowers appear in late February to mid-March with the subsequent fruiting occurring from August to early October. The fruit consists of bright red drupe, that is oval shaped and 0.4 – 0.5 inches long. Pondberry tends to form thickets that are readily identifiable during the flowering period. Pondberry prefers wetland habitats that include the margins of sinks, ponds and other depressions in the more coastal areas, such as Carolina Bays (USFWS, 1995). The project area does include various wetland areas, including linear ditches and minor amounts of forested wetlands. HDR recommends that a pedestrian survey for this species be

conducted during the appropriate survey window (between February and March) to confirm the presence or absence of the species on the site.

CANBY'S DROPWORT (*OXYPOLIS CANBYI*) - ENDANGERED

The Canby's dropwort is a perennial herb with an erect stem that normally grows to 31–47 inches. The stems usually branch well above the mid-stem, and the leaves are described as 'quill-like'. They have a five-part flower with white petals and green to reddish sepals that appear in August and September. Canby's dropwort is found in a variety of coastal plain habitats including pond cypress savannahs, Carolina bays, and wet pine savannahs. The following soil types have been documented to support Canby's dropwort: Rembert loam, Portsmith loam, McColl loam, Grady loam, Coxville fine sandy loam, and Rains loam. The plant appears to prefer areas that are wet throughout most of the year, with open or no canopy or areas that are frequently burned (USFWS, 1990). The project area does include various wetland areas, including linear ditches, pine wetlands, and minor amounts of forested wetlands. HDR recommends that a pedestrian survey for this species be conducted during the appropriate survey window (between mid-August and October) to confirm the presence or absence of the species on the site.

NORTHERN LONG-EARED BAT (*MYOTIS SEPTENTRIONALIS*) - THREATENED

This species of bat will typically be 9 centimeters in length with long ears. Currently the population is in a swift decline due to the white-nose syndrome, with populations decreasing up to 99 percent in caves which white-nose fungi is present. During the winter, these bats will typically hibernate in caves, mines, or tunnels with cool temperatures, high humidity, and no air currents. Foraging and roosting outside of hibernation takes place in and around forests. Dead or dying trees are central to the bat's social groups (NatureServe 2017). Aerial photographs and the site reconnaissance suggest the Study Area contains trees which could be used as potential roosts. As such, it is possible for this species to be affected by the project. To mitigate impacts to the species, cutting of trees within the Study Area should be avoided during the months of June and July. Under the USFWS 4(d) rule for Northern long-eared bat (NLEB) incidental take of NLEB is permitted providing the work area is not within 0.25 miles of a known hibernation site, or within 150 feet of a known, occupied maternity roost. HDR recommends informal consultation with USFWS to determine whether there are any known hibernation sites or maternity roosts in the vicinity of the project.

Recommendation Summary

After developing this CIA and reviewing potential issues associated with the Study Area, HDR recommends the following actions for advancing project development:

- Delineate jurisdictional waters of the U.S. (streams and wetlands) within the likely impact areas of the project site.
- Submit request for Jurisdictional Determination to the USACE Charleston District.
- Request a pre-application site visit with the USACE and SCDHEC to discuss a permitting strategy for the project.
- If streams and wetlands cannot be avoided, USACE Section 404/401 permit processes may be triggered. If impacts do not exceed 0.5 acre of wetlands and/or 300 linear feet of stream channel then the project has the potential to be permitted under Nationwide Permit Number 51. Access road impacts could be permitted under Nationwide Permit 14, while utility impacts could be permitted under Nationwide Permit 12. If impacts exceed 0.5 acre of wetlands an Individual Permit (IP) would be required. Both a Nationwide Permit and an IP would trigger USFWS Section 7 Consultation and Section 106 of the National Historic Preservation Act of 1966.
- Conduct a habitat survey for American chaffseed, Canbys dropwort, pondberry, RCW, and wood stork habitat within the likely impact area of the project site.
- If Section 404/401 permitting is required, the USACE will consult with the USFWS, pursuant to Section 7 of the Endangered Species Act, regarding possible impacts to threatened and endangered species. HDR recommends that informal consultation with the USFWS be conducted to confirm the lack of documented occurrences and determine whether formal threatened and endangered species surveys will be required.
- Initiate coordination with the South Carolina State Historic Preservation Office to request comment on the project as part of the Section 404/401 permitting process.
- Initiate coordination with Georgetown County Planning and Zoning Department regarding the zoning conditions applicable to the project.

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A

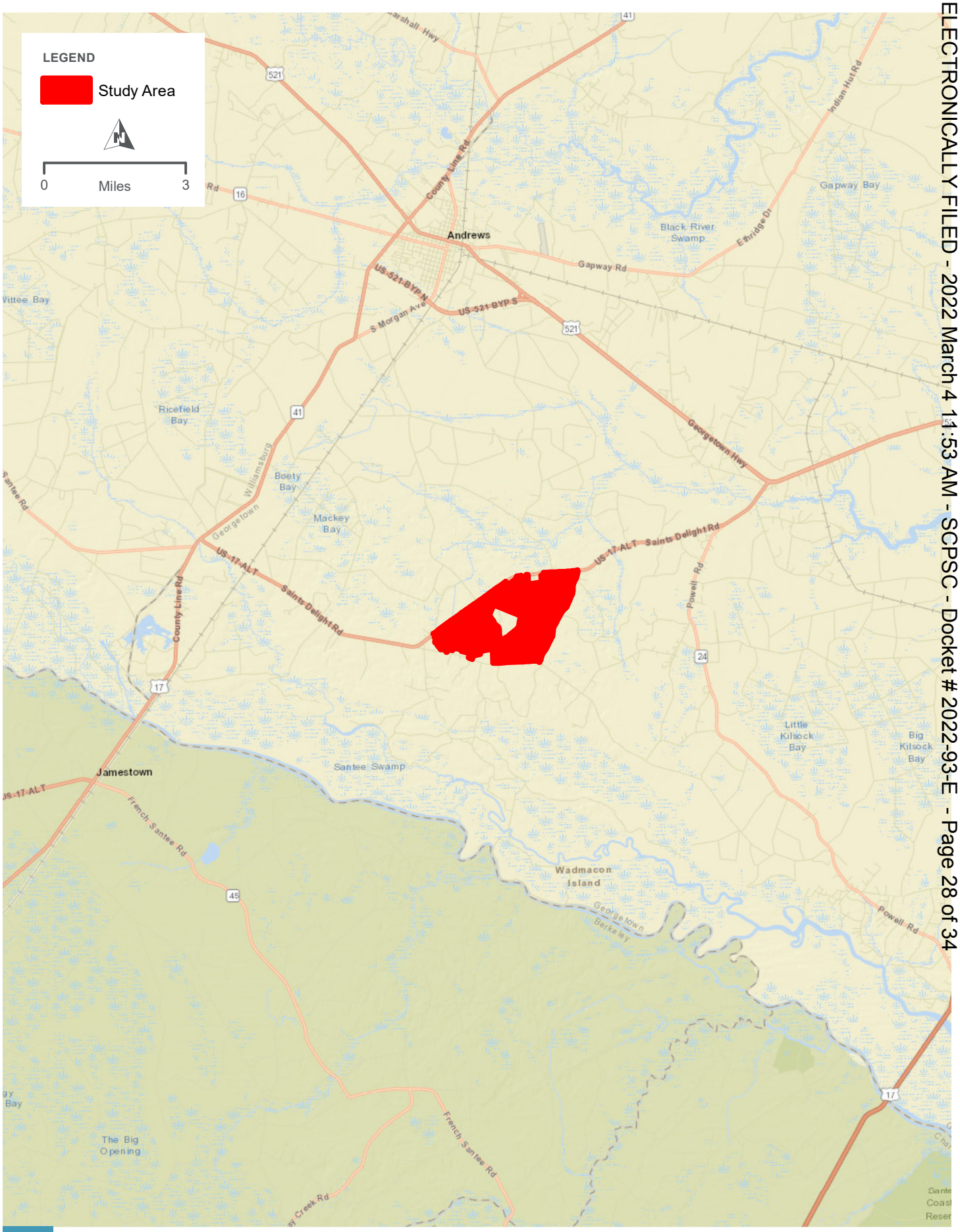
Appendix A – Permitting Matrix and Permitting Memo

Regulatory Authority	Statute	Permit/ Approval	Description	Trigger	Fee	Application Timeline	Public Notice	Likely to affect project?	Website
Federal Approvals									
US Army Corps of Engineers (USACE)	Clean Water Act (CWA)	Section 404 Permit	Required for the discharge of dredged or fill material into waters of U.S. Minimal levels of fill (<0.5 acre) may be covered under Nationwide Permit (NWP) No. 51 Impacts greater than 0.5 acres or wetland and/or 300 lf of stream channel will require an individual permit	Impacts to waters of the U.S.	No fee.	45 days for NWP 275 to 365 days for Individual Permit	No notice for NWP. IP published on USACE website	High	http://www.usace.army.mil/
South Carolina State Historic Preservation Office (SHPO)	National Historical Preservation Act (NHPA)	Concurrence /Project Modification (Section 106 Compliance)	Federal lead agencies (typically USACE) consult with the SHPO regarding potential effects on historic resources.	Federal actions that would affect properties protected by the NHPA. Applicable if there is a federal nexus (e.g., CWA Section 404 Permit)	No fee.	45 days for review	No	High	https://scdah.sc.gov/historic-preservation/technical-assistance/publications/forms

Regulatory Authority	Statute	Permit/ Approval	Description	Trigger	Fee	Application Timeline	Public Notice	Likely to affect project?	Website
United States Fish and Wildlife Service	Endangered Species Act 16 USC § 1531; 1544, 87 Stat. 884	Section 7 or 10; consultation and incidental take authorization	Consultation will address entire project and incidental take as part of the project.	Activity that may affect federally listed species. Section 7 requires federal nexus. If federal Section 404 permit is required it can trigger informal consultation between USACE and USFWS	No fee.	Section 7: 135 days from the time consultation Section 10: No mandated Review timeframes	No	High	http://fws.gov
State Approvals									
South Carolina Department of Health and Environmental Control (SCDHEC)	CWA	Section 401 Certification	Verify that project construction would comply with state water quality standards.	USACE Section 404 Permit	No fee	60 days for projects permitted under NWP	Public notice required for IP	High	https://scdhec.gov/environment/water-quality/water-quality-certification-program-section-401-overview
SCDHEC	National Pollutant Discharge Elimination System (NPDES) Act	General Permit (Construction Stormwater)	For stormwater discharges from construction activities.	Disturbance of more than 1 acre.	$300 per acre of disturbance	Notice of Intent and stormwater pollution prevention plan (SWPPP) to be filed 30 days prior to construction.	No	High	https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permits/stormwater-permits/construction-sw

B

Appendix B – Site Maps



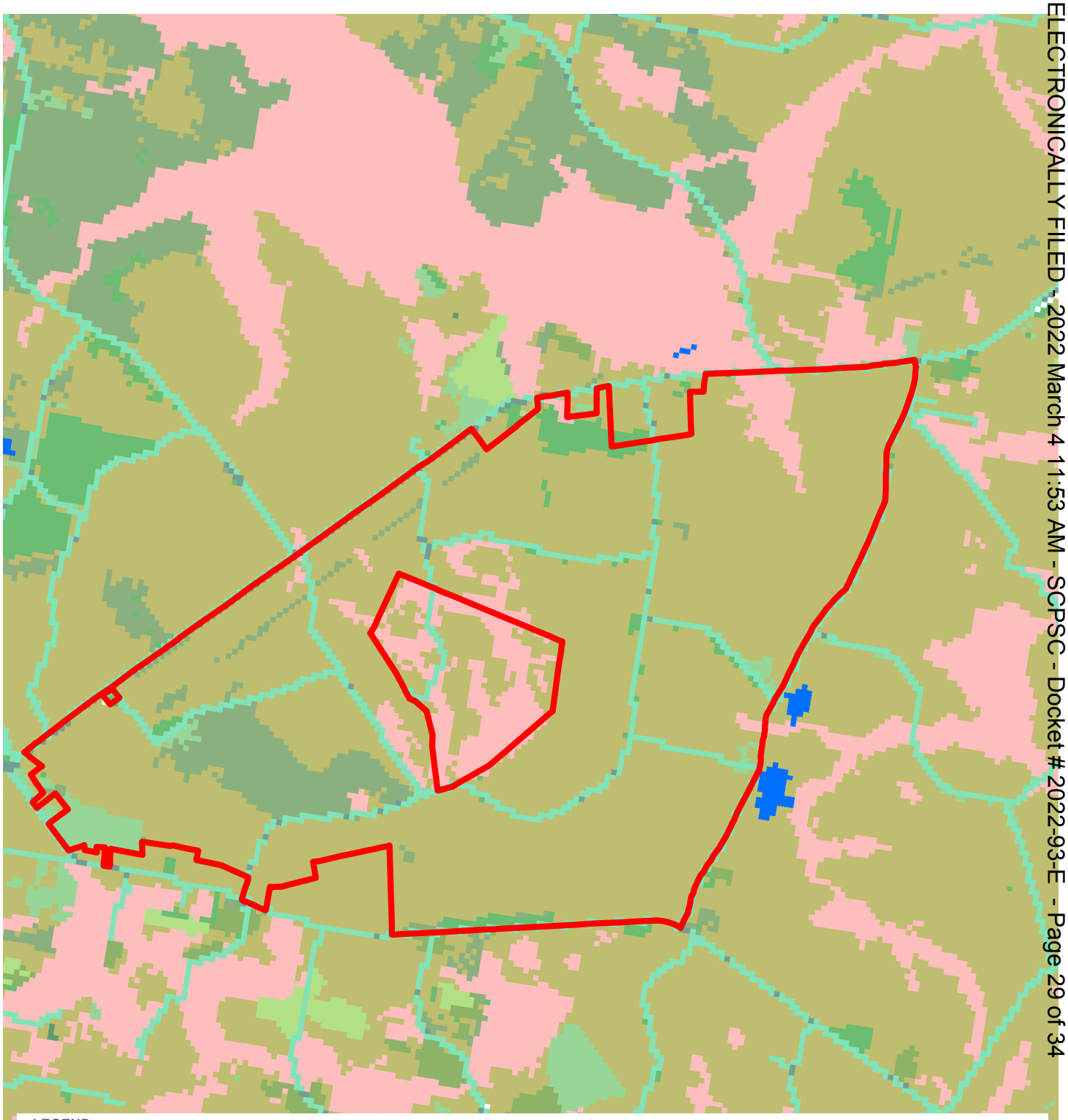
PROJECT LOCATION

LAMBERT SITE

FIGURE 1

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\10532_SILICONRANCHCORPORATION\10172411_LAMBERT\7.2_WIP\MAP_DOCS\MXD\CIA\UPDATED\FIGURE_1_LOCATION.MXD - USER: JMCMASTE - DATE: 8/14/2019

CRITICAL ISSUES ANALYSIS



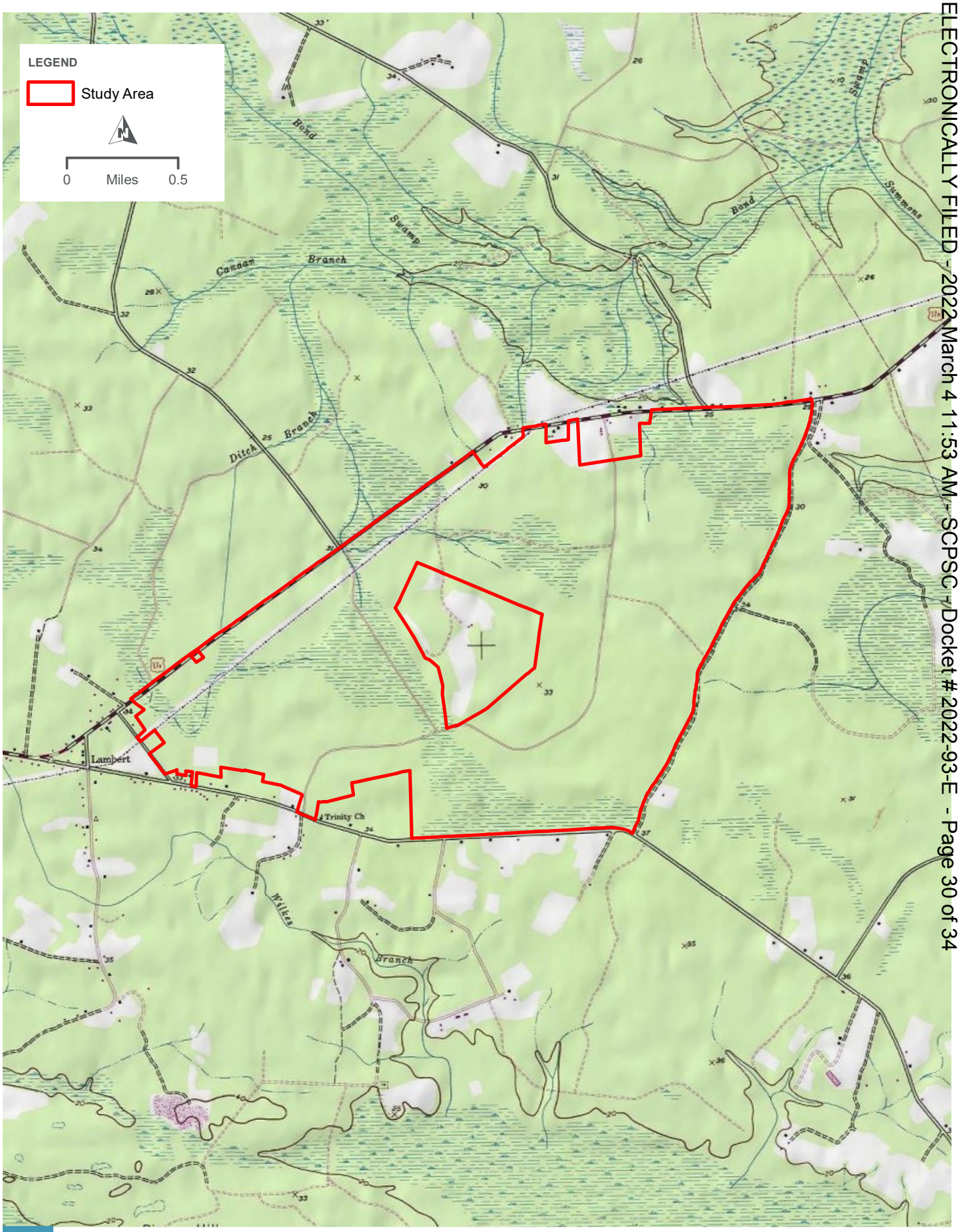
HDR

SILICON RANCH

LAND COVER

LAMBERT SITE

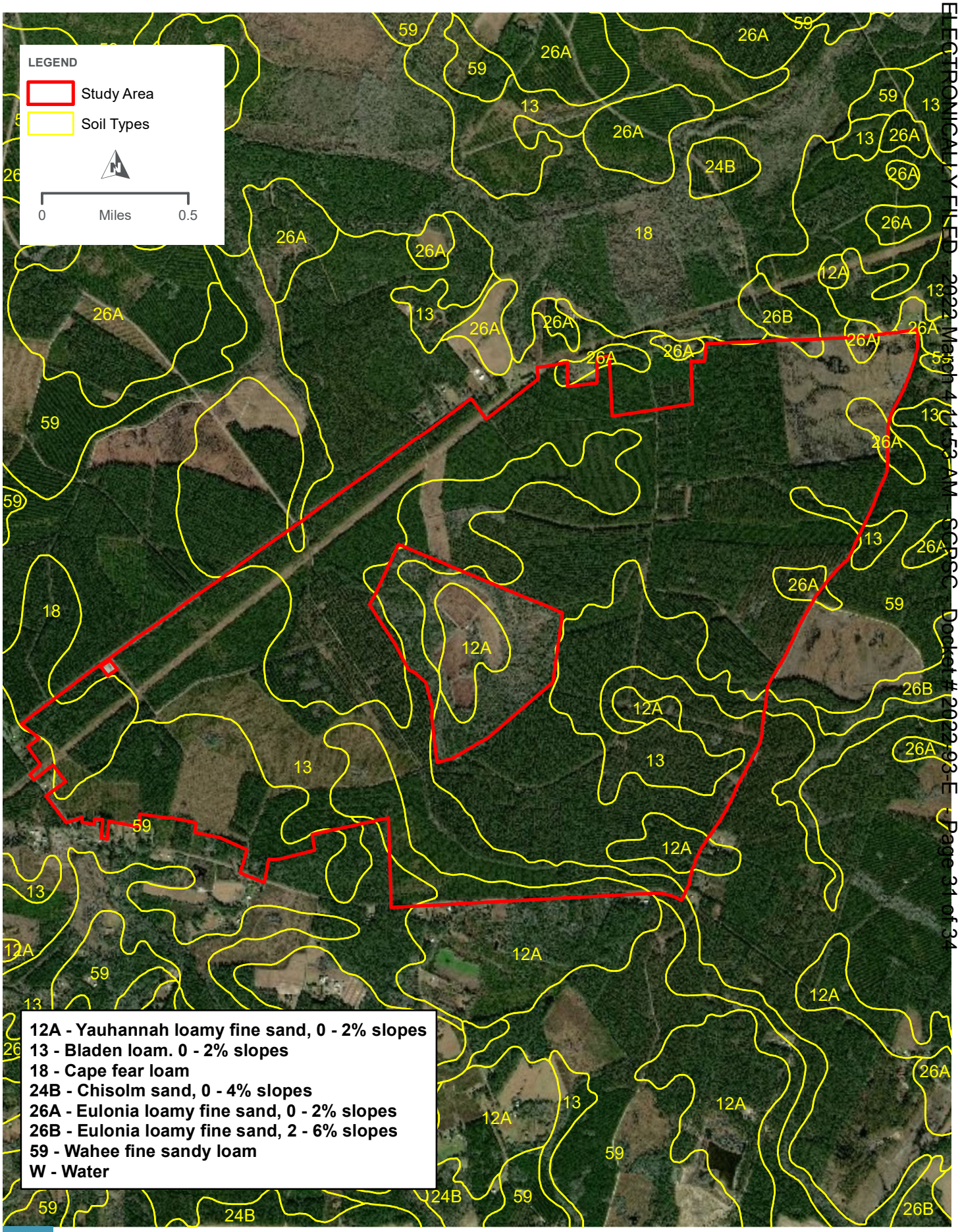
FIGURE 2



USGS TOPOGRAPHY

LAMBERT SITE

FIGURE 3

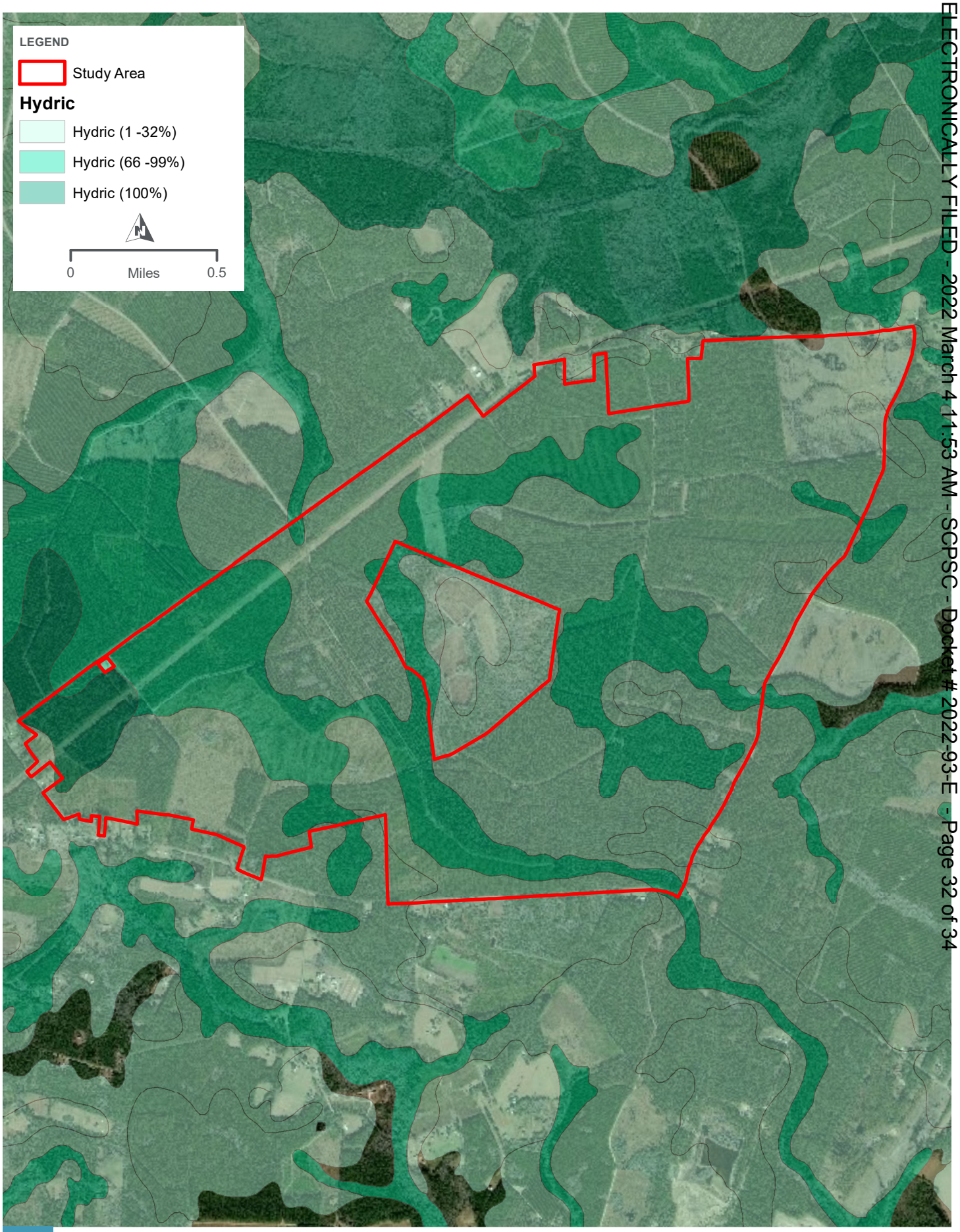


SILICON RANCH

SOIL TYPES

LAMBERT SITE

FIGURE 4



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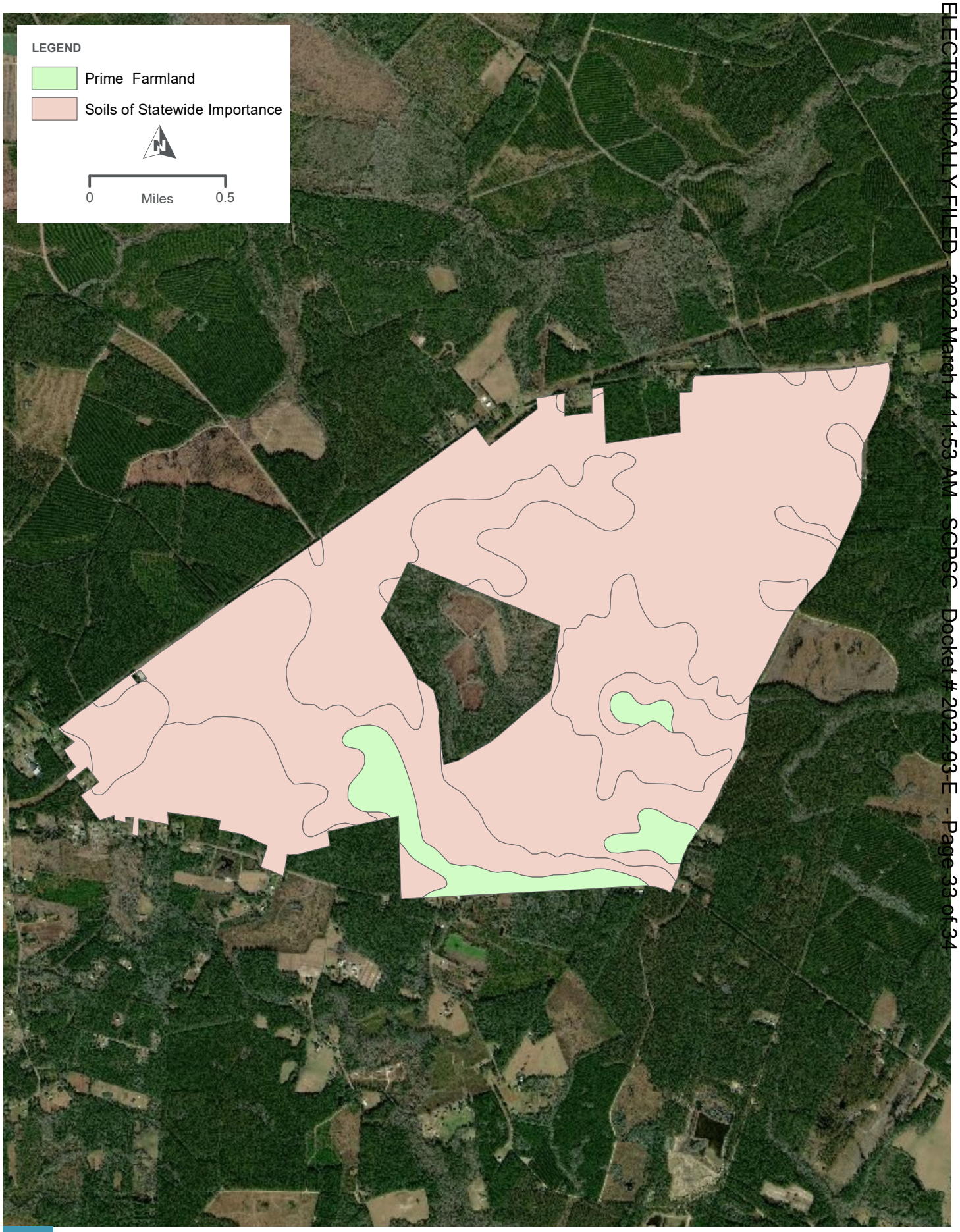
SILICON RANCH

HYDRIC SOILS

LAMBERT SITE

FIGURE 5



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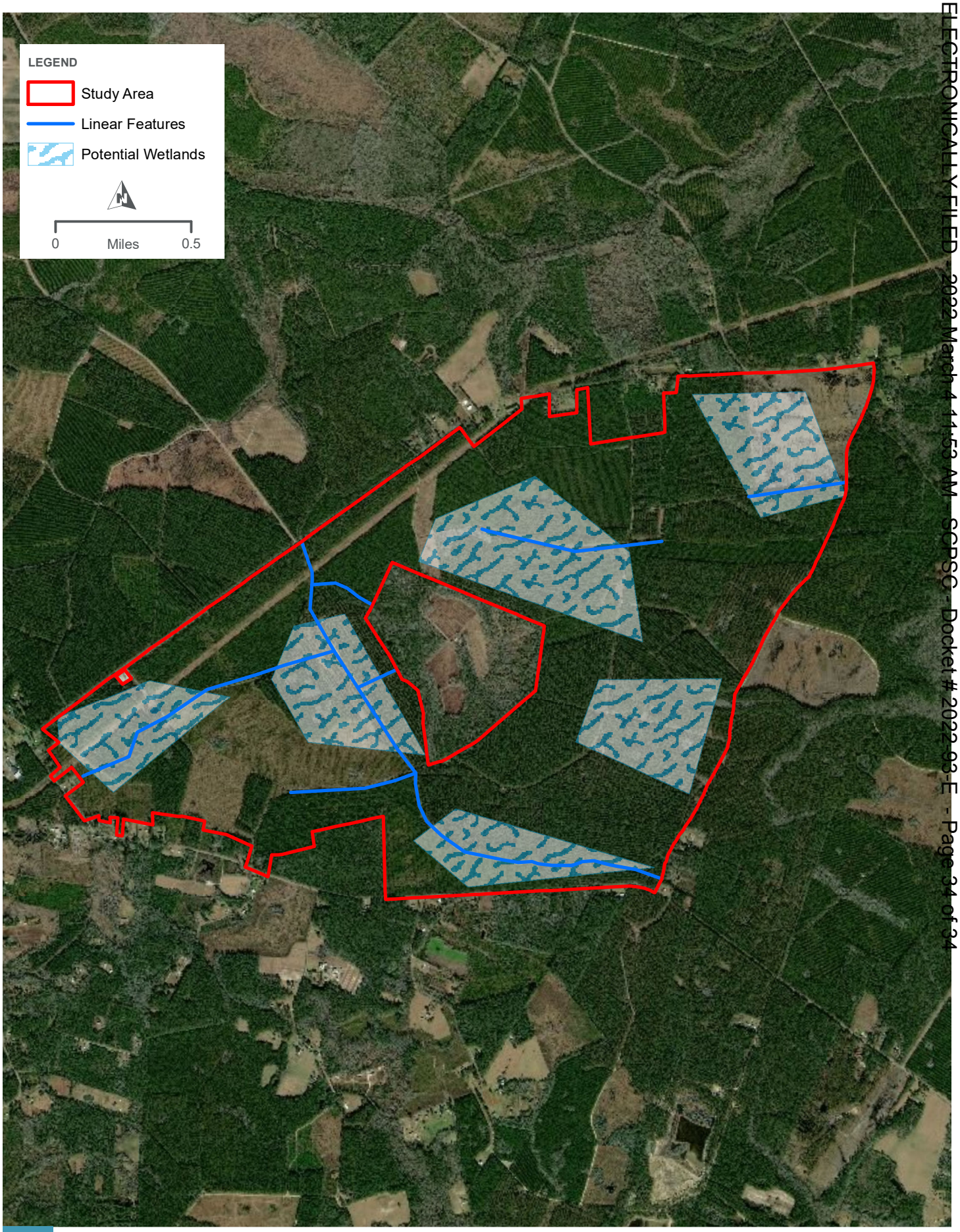
SILICON RANCH

PRIME FARMLAND SOILS

LAMBERT SITE

FIGURE 6



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SILICON RANCH

POTENTIAL WATERS OF THE U.S.

LAMBERT SITE

FIGURE 7

CRITICAL ISSUES ANALYSIS